

THE OCCURRENCE OF  
*TOXORHYNCHITES AMBOINENSIS*  
IN WESTERN SAMOA

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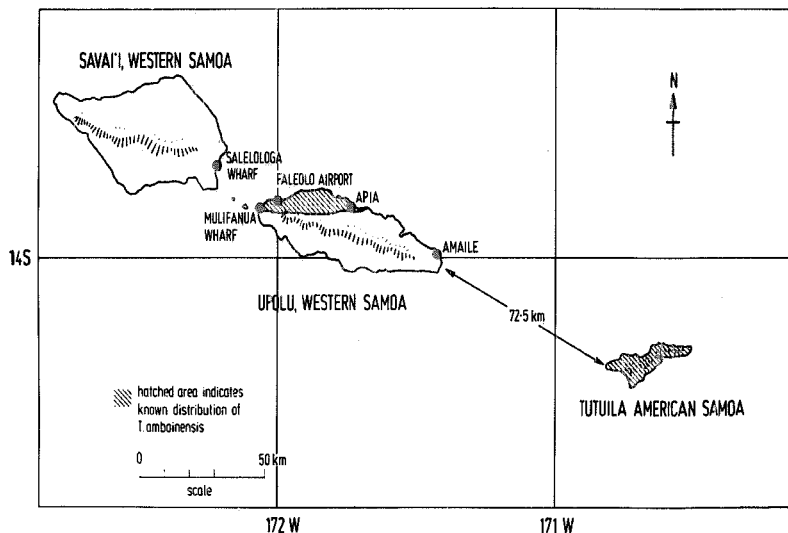
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The genus *Toxorhynchites* is not indigenous to the islands of the eastern South Pacific, but through a number of attempts to introduce species of this predatory mosquito for the control of mosquito vectors of Bancroftian filariasis it has become established in the region. While there are no published accounts nor governmental records of an attempt to introduce *Toxorhynchites* into Western Samoa, several efforts during the 1950's to establish the genus in neighboring American Samoa (Peterson 1956) resulted in the establishment of a species mistakenly thought to be *Tx. splendens*

(Wiedemann), but since shown to be *Tx. amboinensis* (Doleschall) (Ramalingam and Belkin 1976). Now, the regular occurrence in Western Samoa of a previously unreported species identified as *Tx. amboinensis* (W. A. Steffan, pers. comm.) is assumed to be the result of an accidental introduction from American Samoa.

The islands of Western Samoa lie northwest of the islands comprising American Samoa; at their closest points the 2 groups are separated by approximately 70 km of ocean. The tradewinds blow from the southeast across the Samoas and while there is an example of *Tx. splendens* having been windblown several miles between islands of the Fiji group (Lever 1943) the known distribution of *Tx. amboinensis* (shaded area of map) within Western Samoa is not entirely suggestive of this possibility. Except for 1 village, Amaile, at the eastern tip of Upolu Island, *Tx. amboinensis* has been collected exclusively from the northwestern coast of Upolu and from around the wharf at Salelologa, Savai'i Island. Whereas the eastern and southern coasts of Upolu are open to the winds that could conceivably carry *Toxorhynchites* adults from American Samoa the northern coast is shielded from these winds by the mountainous interior of the island. However, within the area of heaviest distribution is also to be found the harbor at Apia, the airport at Faleolo, the two wharves serving inter-island shipping and about 50% of the country's



human population (1971 census). Introduction of *Tx. amboinensis* through the ports and dispersal along the lines of human settlement seems the strongest likelihood.

*Tx. amboinensis* first began appearing in the larval collections of the Vector Control Team of Western Samoa around 1970, 15 years after having been introduced into American Samoa. Since 1974, 2.7% of the larval samples taken in the shaded portion of the map have contained *Tx. amboinensis*. The immature stages are most frequently found around the home in tires, 44 gallon drums, and other large artificial containers. In the bush the mosquito prefers to breed in treeholes. Contrary to the situation suggested to exist in American Samoa (Ramalingam and Belkin 1976) the leaf axils of taro (*Colocasia* spp.) and ta'amu (*Alocasia* spp.) are not a major source of *Tx. amboinensis* breeding in Western Samoa. Only once has it been collected from a leaf axil; that being of a *Pandanus* sp. The preferential breeding of *Tx. amboinensis* in the larger artificial and natural containers regularly brings it into association with both *Aedes polynesiensis*, local vector of *W. bancrofti*, and *Ae. aegypti*. A field experiment showed *Tx. amboinensis* to populate readily a

group of abandoned tires and over the period of 1 year nearly 600 larvae and pupae were found in these tires. This study further assessed the effectiveness of *Tx. amboinensis* as a biological control agent of *Ae. polynesiensis* and *Ae. aegypti*, the first such comprehensive evaluation in the Pacific, and results are being prepared for publication.

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